R645-301-500 ENGINEERING

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R645-301-510. INTRODUCTION

Coal mining has occurred since 1946 in Deer Creek Canyon, a tributary of Huntington Canyon in Emery County, Utah. Utah Power & Light Company (now PacifiCorp) purchased the operations and coal leases from Peabody Coal Company in 1977. The Deer Creek Mine portal, mine personnel, and its coal handling facilities are located in Deer Creek Canyon. PacifiCorp successfully acquired the Mill Fork State Lease and entered COAL MINING LEASE AND AGREEMENT with the State of Utah on April 1, 1999. The coal tract as described in the lease contains approximately 5,562.82 acres, more or less. On January 25, 2006 PacifiCorp applied for the Mill Fork West Extension Tract, serial number UTU-84285, adjacent to the western boundary of the Mill Fork State Lease ML-48258. This lease-by-application included 213.57 acres. Mining of this Mill Fork permit~~Lease~~ area including the Mill Fork State Lease and the adjacent Federal Lease UTU-84285 will be accomplished through the use of the Deer Creek portals and existing facilities and production of this area will continue in the Blind Canyon and Hiawatha coal seams.

A variety of engineering principles and techniques are applied in the Deer Creek Mine operation. More detail about the methodologies used to plan the coal mining activities for the expected life of mine at this operation can be found in Volume 2, Part 3 of the MRP.

R645-301-511. GENERAL REQUIREMENTS

This document will include the general requirements to meet the State of Utah's regulatory requirements to mine coal in the Mill Fork Area as part of the Deer Creek Mine. The proposed new mining plan will include new information or reference the existing mine plan when appropriate. The potential impact to the environment will also be addressed. As reflected by its format, this amendment to the plan attempts to follow the Rules general format within R645-301-500 regulations.

R645-301-512. CERTIFICATION

Applicable cross sections and maps have been included or referenced within this document. They have been prepared by, or under the direction of, and certified by a qualified, registered, professional engineer or land surveyor, with assistance from experts in related fields such as hydrology, geology and biology.

R645-301-513. COMPLIANCE WITH MSHA REGULATIONS AND MSHA APPROVALS

As required by MSHA regulations, the surface of the mine site is inspected on a quarterly basis, and on spot inspections as deemed necessary by the governing agency. All mine openings are inspected on a quarterly basis and /or more often if deemed necessary by MSHA. Compliance with the requirements of both DOGM and MSHA regarding these facilities shall be adhered to by PacifiCorp.

Because the area is a permitted coal mine, existing coal processing waste dams, embankments, impoundments, sediment ponds, and refuse piles comply with MSHA regulations governing them. Any new or additional structures proposed for mining the Mill Fork Area shall also be subject to these regulations.

Underground development waste, coal processing waste and excess spoil will continue to be disposed of in accordance with plans approved by MSHA and DOGM. There are no plans to return coal processing wastes to the underground workings at Deer Creek Mine.

R645-301-514. INSPECTIONS

All appropriate engineering inspections and reports will be conducted by a qualified registered professional engineer or other qualified professional specialist under the direction of the professional engineer.

R645-301-515. EMERGENCY PROCEDURES

R645-301-515.10. Reporting a Slope Failure

At any time a slide occurs which may have a potential adverse effect on public, property, health, safety, or the environment, the operator will notify DOGM promptly of the problem and of any remedial measures planned to correct the problem. PacifiCorp will comply with any remedial measures requested by DOGM and agreed upon by the operator.

R645-301-515.20 Impoundment Hazards

No new impoundments are planned for the Mill Fork permit area~~expansion~~. At the existing facilities, if any examination or inspection discloses that a potential hazard exists with any impoundment structure, the operator will notify DOGM promptly and detail the emergency procedures required for public protection and remedial action. If adequate procedures cannot be formulated or implemented, DOGM will be notified immediately.

R645-301-515.30 Temporary Cessation

Where temporary cessation of operations is necessary for a period beyond 30 days, the operator will submit proper notification and comply with the requirements of R645-301-300 regarding this action.

R645-301-520. OPERATION PLAN

R645-301-521. Introduction

The plan for ~~the~~ mining in the Mill Fork Area includes references maps, cross sections, narratives, descriptions, and calculations indicating how the relevant requirements are met. The plan describes and identifies the lands subject to coal mining and reclamation over the estimated life of the operations and describes the size, sequence, and timing of the sub-areas for which it is anticipated that individual permits for mining will be sought.

R645-301-521.110. Previously Mined Areas

Areas previously mined at the Deer Creek Mine are shown on Volume 4, Map 1-3 and Maps MFU1840D and MFU1841D included in this section.

R645-301-521.120. Support Facilities

Surface facilities of the Deer Creek Mine include the following: sediment pond, embankment fills, coal surge bin, transfer tower, breaker station, crusher station, coal weigh bin, truck load-out facility, conveyors, overland conveyor, parking lot, parking garage, office-bathhouse, warehouse-shop, materials storage area, access and service roads, mine ventilation fan, power supply and substation, water treatment system, high pressure pumphouse, water storage tank, sewer treatment system, and drainage system (see Volume 5, Maps 3-9 and 3-9A).

Another support facility of the mine is located in the Left Fork of Rilda Canyon. This facility includes an access road and a pad area which supports two portals, a substation, power line, fan, water storage tank, and pumphouse. Topsoil removed prior to construction of the site is also stored within the permit area of the Rilda Canyon facilities. Additional information about this facility is provided in Volume 2, Part 3 and Volume 5, Map 3-9A.

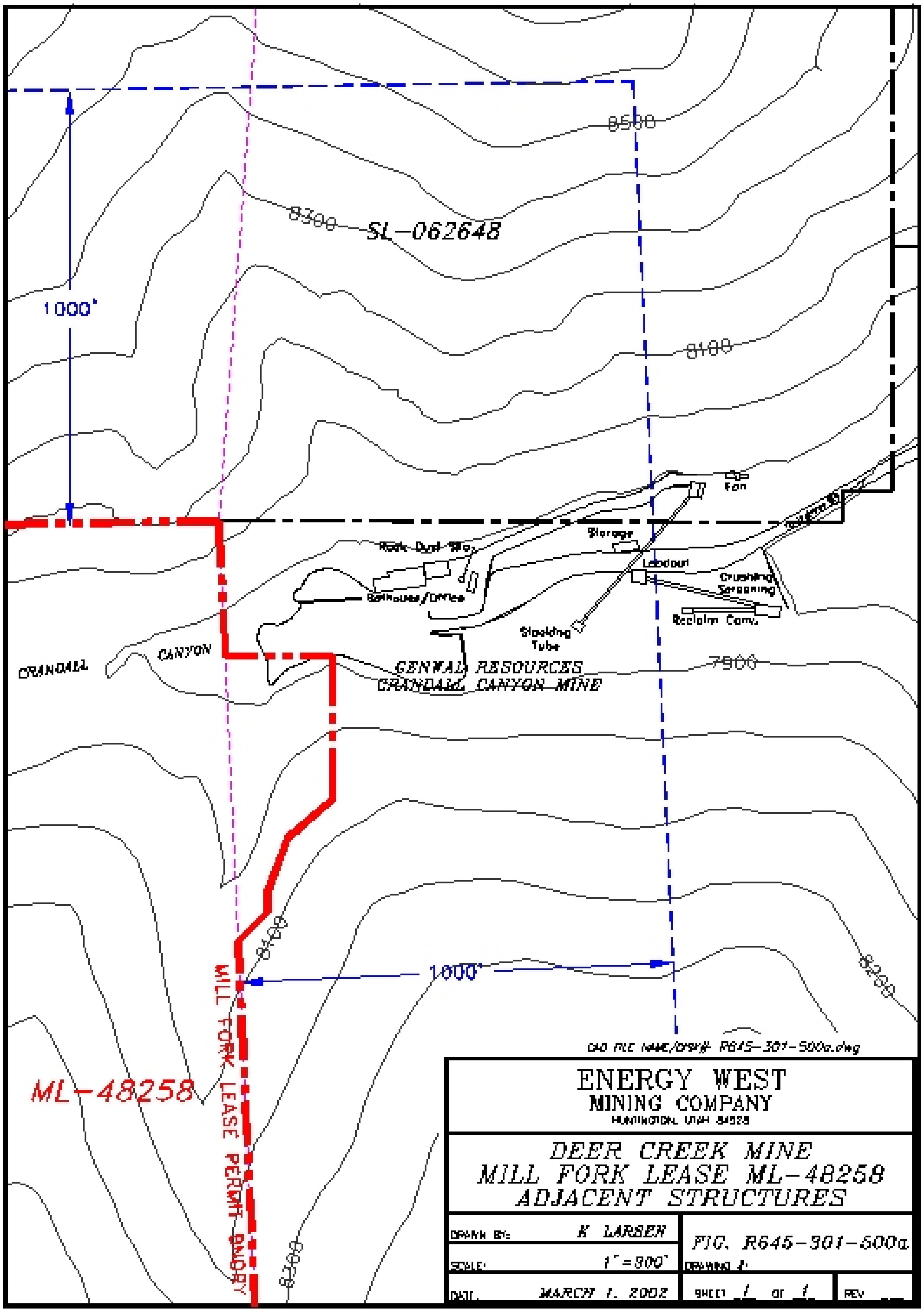
In addition to the Left Fork facilities, PacifiCorp permitted a new facility in Rilda Canyon during 2005, refer to Volume 11 for complete details related to the Rilda Canyon area.

An off-site support facility of the mine is the Deer Creek Waste Rock Storage Facility located northeast of the mine site, near State Highway 31. See Volume 10 of the MRP for more details of the Deer Creek Waste Rock Site. Additional information about all support facilities at the Deer Creek Mine is included in Section 526 of this document.

All mining activities associated with the Mill Fork permit area will be through underground mining operations. Mine plan layouts (Hiawatha Seam) depicted in R645-301-500 Engineering Section, indicate potential portal breakouts located in Crandall Canyon, (Section 5, Township 16 South Range 7th East SLB&M), within a 2.41 acre right-of-way easement acquired from Andalex Resources/Intermountain Power Agency . The location of the portal breakouts are considered preliminary at this point and will be evaluated and designed based upon future surface coal exploration programs and mine plan considerations. Prior to any surface disturbance, Energy West will secure all necessary permits.

R645-301-521.121. Location of Buildings

Volume 5, maps 3-9 series (drawings DS202E, DS1812E and CE-10883-EM) and Volume 11 - Engineering Section identify the location of all buildings and structures related to the Deer Creek Mine including Rilda Canyon. The Genwal Coal Mine is located within 1000 feet of the Mill Fork permit area. Figure R645-301-500a identifies the location of all buildings within 1000 feet of the permit area, with the identification of the current use of the buildings.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8300
SL-062648
1000'
8100
Fan
Storage
Rock Dust Silo
Loadout
Crushing
Screening
Bathouse/Office
Reclaim Conv.
Stacking
Tube
CRANDALL
CANYON
GENWAL RESOURCES
CRANDALL CANYON MINE
7900
8100
1000'
8200
MILL FORK LEASE PERMIT BNDRY
ML-48258
8300
CAD FILE NAME/DWG# R645-301-500a.dwg
ENERGY WEST
MINING COMPANY
DEER CREEK MINE
MILL FORK LEASE ML-48258
ADJACENT STRUCTURES
DRAWN BY: K LARSEN
SCALE: 1"=300'
DATE: MARCH 1, 2002
FIG. R645-301-500a
DRAWING #:
SHEET 1 OF 1
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R645-301-521.130. Landowners and Right-of-Entry

The landowners of record, both surface and subsurface, included in or contiguous to the permit area are shown on Map MFS1838D and described in the General Section - R645-301-112.

PacifiCorp applied for and received approval for a lease modification of 65.7 acres which connects Federal Coal Lease U- 06039 to the Mill Fork State Lease ML-48258 and grants legal right of entry to the Mill Fork Area.

R645-301-521.140. Mine Maps and Permit Area Maps

Maps MFS1838D, MFU1837D (General Section), MFU18410D and MFU1841D (Engineering Section) shows the existing leases of the permit and the Mill Fork Area along with the boundaries of all areas proposed to be affected over the estimated total life of the coal mining and reclamation operations.

R645-301-521.141. Boundaries of Areas Affected by Mining.

As documented in R645-301-525: Annual Subsidence Survey Procedures, the effects of significant subsidence are assumed to be coincident with the outline of the planned mine workings. Therefore, significant subsidence will not cross outside of the permit boundary. Map MFS1866D projects the affected area boundary based on two methods; 1) angle-of-draw, and 2) actual subsidence case studies from the East Mountain area. As depicted on map MFS1866D, the angle-of-draw method projects potential affected areas beyond the northern permit boundary. Based on historical case studies of actual subsidence, (refer to Figure R645-301-500E and Annual Subsidence Reports), the affected boundary will not exceed the permit boundary. If subsidence occurs outside the permit boundary based on annual subsidence surveys, PacifiCorp commits to amending the permit boundary to include the affected area.

R645-301-521.142. Maps of Planned Subsidence Areas.

Areas in which planned subsidence techniques (as discussed in R645-301-525, SUBSIDENCE CONTROL PLAN and Mining Methods and Subsidence) are to be used are shown on maps MFU1840D (Hiawatha Seam Mine Plan) and MFU1841D (Blind Canyon Mine Plan). These maps show the extent of the areas to be subsided and the sequence in which they will be subsided. As discussed in R645-301.521.141, map MFS1866D shows the extent of projected subsidence (affected area) based on two methods; 1) angle-of-draw, and 2) actual subsidence case studies from the East Mountain area.

R645-301-521.150. Land Surface Configuration Maps

Topographic maps used to depict surface contours with the permit area are shown in Map MFS1866D.

R645-301-521.170/180. Transportation/Support Facilities Maps

All mining activities associated with the Mill Fork permit area will be through underground mining operations. Mine plan layouts (Hiawatha Seam) depicted in R645-301-500 Engineering Section, indicate potential portal breakouts located in Crandall Canyon, (Section 5, Township 16 South Range 7th East SLB&M), within a 2.41 acre right-of-way easement acquired from Andalex Resources/Intermountain Power Agency . The location of the portal breakouts are considered preliminary at this point and will be evaluated and designed based upon future surface coal exploration programs and mine plan considerations. Prior to any surface disturbance, Energy West will secure all necessary permits.

R645-301-522. COAL RECOVERY

This section includes a description of the mine plan and measures to be used to maximize the use and conservation of the coal resource. The description attempts to show that coal mining and

reclamation operations are conducted to maximize the utilization and conservation of the coal, while utilizing the best technology currently available to maintain environmental integrity. This decreases the likelihood of re-affecting the land in the future through coal mining and reclamation operations.

The Mill Fork Area is governed by SITLA, BLM and DOGM for conservation and royalty payments of the coal scheduled to be mined. Mining plans must be approved by SITLA in cooperation with the BLM for the Mill Fork State Lease and the BLM for UTU-84285 before mining can occur within these areas. A Plan of Operations has been approved and is on file with SITLA to ensure the diligent development and extraction of all minable coal, including the Mill Fork State Lease and UTU-84285.

The lower Blackhawk Formation of the Wasatch Plateau contains two minable seams in this general area - the Blind Canyon (upper) and Hiawatha (lower) coal seams. Interpretation of the surface drilling information indicates that both seams are minable over 50% of the Mill Fork Area. Thus, multiple seam mining will be extensively practiced where the Blind Canyon seam will be mined first and the Hiawatha seam extracted afterwards. This situation requires prudent mine planning and practices to optimize safe mining and resource recovery. Based on previous experience at the Cottonwood and Deer Creek operations with multiseam mining, all main entries are columnized as closely as possible to the upper seam mains and all development gate entries proposed in the lower seam are staggered into the gob of the panel extracted above them by at least 50'. Ongoing exploration including select additional surface holes as well as interseam drilling (approximately 2000' distances along gates) during the mining of the Blind Canyon seam is required to define minable thickness limits and potential quality.

Another major consideration to the overall coal recovery of this area is deep overburden. The area of the Blind Canyon minable seam greater than 2000' of overburden is 40% and in the

Hiawatha minable area accounts for 51%. The maximum overburden exceeds 2600'. This plays a significant part in the layout of the mine plan and a major determinant in the potential reserve recovery. The present layout shows primarily three panels in a series, a barrier and then three more panels for the minimization of potential face stress that may result in face and tailgate bouncing.

The operator will mine, generally to the top rock in all development entries to maintain integrity of the top against abutment pressures exerted by the longwall retreat. Most development entries will be no more than 8 ½' high or seam height to improve safety by limiting the exposure of the miners to high, unstable ribs. If the seam is greater than 8 ½' , bottom coal will be left in the development entries. The physical limitations of the longwall equipment and safety considerations will determine the resultant retreat reserve recovery. Main or submain entries will be developed for long term stability in 3 to 6 entry configuration with pillars ranging from 80' x 80' to 100' x 120' (centers) in size. Longwall development gates will be developed on a two entry yield pillar configuration with a maximum pillar dimension of 50' x 100' centers. This type of layout has been proven in the Deer Creek and Wilberg/Cottonwood/ Trail Mountain mines since the early 1980's and proven very successful in both enhanced safety and reserve recovery.

Although maximum economic recovery is an important design criteria, other considerations must be looked at, especially the ability to mine maximum or minimum thickness or protective coal barriers which must be left in place to ensure the integrity of the mine entries associated with the active underground workings and to protect personnel and the environment. These categories where coal reserves will not be recovered are addressed as follows:

(1) Property Boundary Barriers: All external property boundary lines are protected by a 50 foot (minimum) solid coal "buffer" barrier.

(2) Protective Main Entry Barriers: Protective main entry barriers are designed to protect long term mine entries from excessive abutment pressures of the retreating longwall. Design of these barriers are based on (i) intended duration of use, (ii) depth of cover in the area, (iii) geologic conditions present, and (iv) historical performance of similar sized barriers in similar conditions.

(3) Bleeder Entry Barriers: Bleeder entry barriers are designed to ensure the long term stability of the longwall panel bleeder system. Design of these barriers is based on (i) intended duration of use, (ii) depth of cover in the area, (iii) geologic conditions present, and (iv) historical performance of similar sized barriers in similar conditions. Evaluation of localized conditions at the time of development, in conjunction with the preceding design parameters, will be on-going to determine final barrier sizing so that bleeder entry stability and coal recovery may be optimized.

(4) Subsidence Protective Barriers: No second mining will take place within the following areas:

- Joes Valley Fault: a 22 degree angle of draw from the intersection of the Joes Valley fault on the western boundary of the lease.
-
- Mill Fork Access Development Mains: no second mining will take place under the main entries of the Mill Fork access development.

These are protective barriers for the long term integrity of their respective areas.

(5) Minimum Mining Height: Areas where the coal thickness is less than 7', in particular for longwall development and retreat. Mining below this height is not feasible under current economic conditions and existing equipment complement.

(6) Maximum Mining Height: In panels where the coal height exceeds the effective mining height of the mining equipment, including longwall equipment, either top or bottom coal will be left.

(7) Barriers Between Series of Longwall Panels: Solid coal barriers will be left between particular series of panels to minimize overriding side abutment pressures.

It is expected that recovery rates of approximately 85% can be obtained within the proposed longwall panel areas. The overall minable reserve recovery for the Mill Fork permit area ~~North Rilda Canyon~~ area of the Deer Creek Mine is estimated at approximately 60~~5~~%.

The Deer Creek mining plan is based on the geologic information of the area obtained from outcrops, drilling, and previous mining by the operator. For geologic information of this area, refer to R645-301-600 Geologic Section of this volume.

Table 500-1 provides the approximate number of acres affected by mining in five-year increments for the Mill Fork permit area~~lease~~. In areas of seam overlap, only the first mining in the area is considered in the calculation of acreage. Subsequent mining in the other seam is not considered since the area has already been affected.

Table. 500-1

Area Affected by Mining (acres)

(Based on March 2005 Mine Plan)

Year	Affected Area (acres)
2003-2007	798
2008- 2012	998
2013- 2017	664
2018 - 2022	97

Total Affected Area = 2,557 acres

R645-301-523. MINING METHODS

Continuous Mining Units (Main Entry and Longwall Section Gateroad Development):
The principal purpose of the continuous mining units within the Mill Fork Area of the Deer Creek Mine is underground mine development (i.e. section development of mainline entries, longwall section gateroad development, and longwall section setup/bleeder entry development; along with development of mine water holding sumps, rock storage rooms, etc.).

Figure R645-301-500b illustrates the basic configuration of a typical five-entry mains, consisting of (nominal) 20 feet wide entries and crosscuts driven on standard 80 feet x 100 feet entry centers. The pillars created measure a (nominal) 60 feet wide x 80 feet long; a size which has been developed for sufficient support of the main entries and overlying strata. Figure R645-301-500c also illustrates the basic configuration of a typical two-entry longwall panel development, consisting of (nominal) 20 feet wide entries and crosscuts driven on (nominal) 50 feet x 100 feet entry centers. With the retreating longwall mining system, all panel development work is accomplished by continuous mining units prior to longwall installation

Continuous miners will provide the development openings for air, men and materials handling, and other utility services. The support and maintenance of these openings will be according to the approved MSHA Ventilation and Roof Control Plans. The contribution of the continuous miner units to the total production accounts for 15-20% of the total recoverable reserve and will vary from year to year with one to three units operating depending on the development window being maintained ahead of the longwall.

Longwall Mining System:

The predominant mining method to be used in the Mill Fork Area of the Deer Creek Mine will be *Longwall Retreat Mining*. This method, as practiced by PacifiCorp, presents the safest and most efficient underground resource recovery mining method available. About 80-85% of the production will result from the single operating longwall which is planned for use in the Mill Fork Area of the Deer Creek Mine.

As referenced above, the two-entry gateroad system is developed with (nominal) 20 feet wide entries and crosscuts driven on (nominal) 50 feet x 100 feet entry centers. This type of "yield pillar" configuration is designed so that the gateroad pillar will gradually yield as longwall retreat proceeds from panel to panel. The purpose of this design is to prevent the buildup of unrelieved stresses within the pillar by allowing the pillar to significantly crush and minimize the load transferred to the next panel or in the multiseam configuration to eliminate a large barrier to be formed which the lower seam would have to cross under. Figure R645-301-500c illustrates the basic configuration of a retreating longwall system. After gateroad entries are driven to the extent of the longwall panel length, on both sides of the longwall panel, setup and bleeder entries are driven to connect the gateroads. A solid coal barrier is left between the setup and bleeder entries, size based on; (1) intended duration of use, (2) depth of cover in the area, (3) geologic conditions present, and (4) historical performance of similar sized barriers in similar conditions.

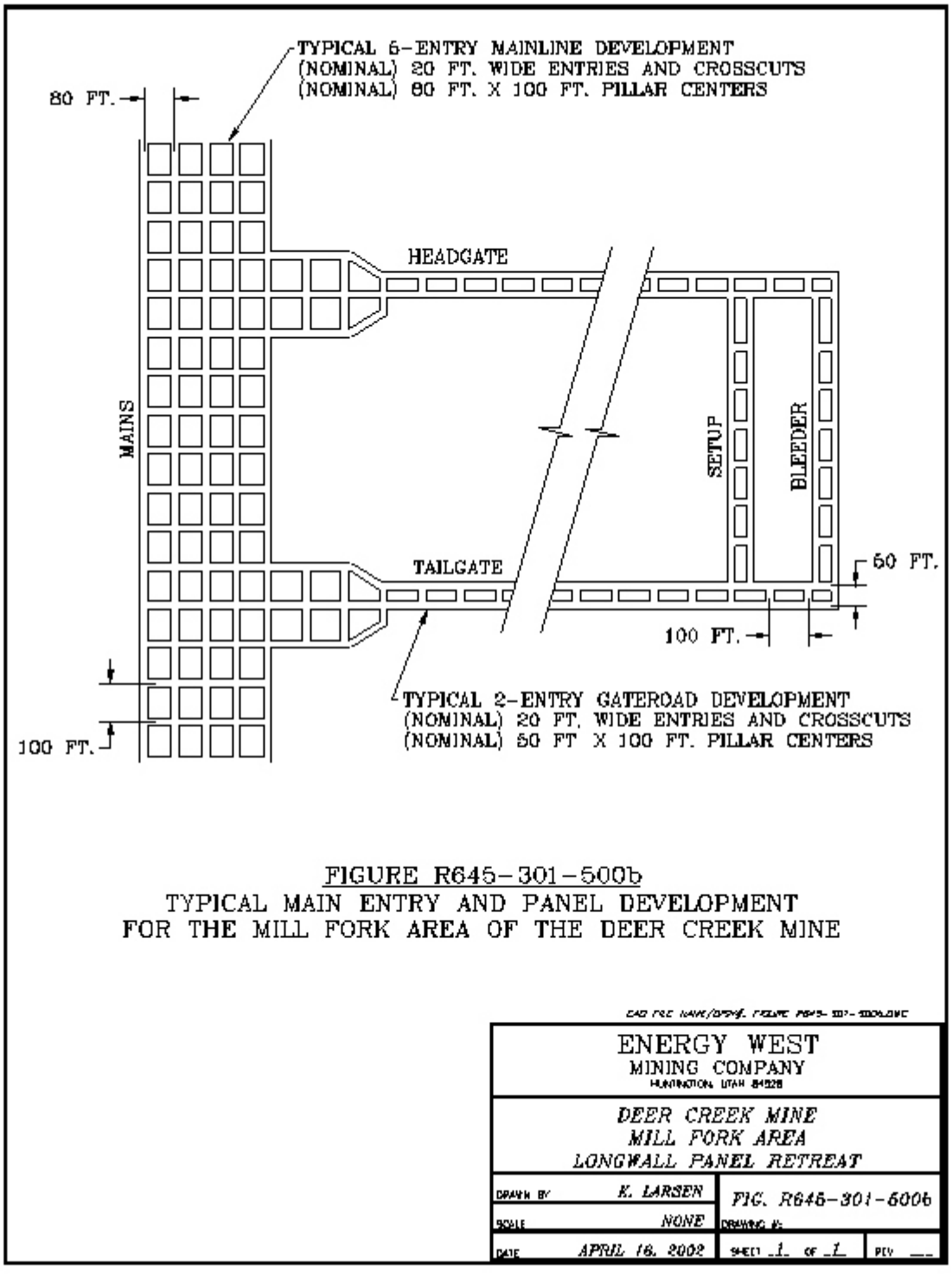


FIGURE R645-301-500b
TYPICAL MAIN ENTRY AND PANEL DEVELOPMENT
FOR THE MILL FORK AREA OF THE DEER CREEK MINE

ENERGY WEST MINING COMPANY HUNTINGTON, UTAH 84528	
DEER CREEK MINE *MILL FORK AREA* *LONGWALL PANEL RETREAT*	
DRAWN BY: *K. LARSEN*	*FIG. R645-301-500b*
SCALE: *NONE*	DRAWING #:
DATE: *APRIL 16, 2002*	SHEET 1 OF 1 REV

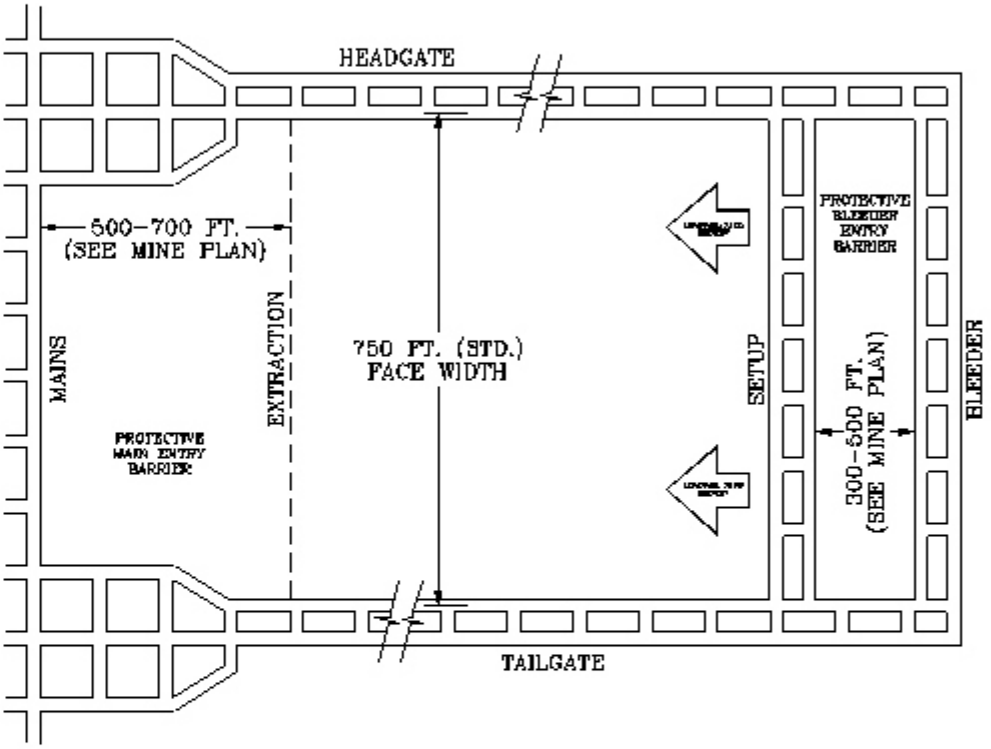


FIGURE R645-301-500c
TYPICAL LONGWALL PANEL RETREAT
FOR THE MILL FORK AREA OF THE DEER CREEK MINE

CAD FILE NAME/DISK#: FIGURE R645-301-500c.DWG

ENERGY WEST MINING COMPANY HUNTINGTON, UTAH 84528		
DEER CREEK MINE MILL FORK AREA LONGWALL PANEL RETREAT		
DRAWN BY: K. LARSEN	FIG. R645-301-500c	
SCALE: NONE	DRAWING #:	
DATE: APRIL 16, 2002	SHEET 1 OF 1	REV. ---

Mine Layout

The mine layout of the Deer Creek Mine for the Mill Fork Area is illustrated on Maps MFU1840D and MFU1841D. The drawings show an arrangement of longwall panels and development sections interconnected by systems of main and sub-main entries. This arrangement is predicated on geographical dedication of reserves, regulatory mining restrictions, available coal quality, and geologic information.

The planned mine development sequence accommodates longwall panels as the primary means of efficiently extracting the reserves. This will ensure the best possible means of maximizing reserve recovery while maintaining consistent coal quality and ground control.

Longwall face width, depending on the geologic parameters of the coal deposit, varies from 500 feet to 780 feet wide. Standard face width is 750 feet center to center (from center-line of head-gate belt entry to center-line of tailgate entry), or 730 feet coal block width. Once installed in the setup entry, the longwall begins retreat mining (from the setup entry "outby" toward the main line entries). A protective barrier is left between the mined out longwall panel (extraction face) and the main line entries that is sized to insure long term main line entry stability.

Panels are designed within the mining area, bounded by natural and imposed limits, with varying degrees of confidence as to final location and extent. Faults may vary somewhat from currently assumed locations. Geologic limitations such as seam splits, channel scours, spars, stratigraphic thinning, burned coal areas, etc. may affect resource recovery by varying the mining limits by hundreds of feet as information becomes available and as mining recovery economics and practicality are further refined. Regulatory mining restrictions, such as escarpment protection barriers and perennial stream buffer zones further confine mining extent. Geotechnical restrictions, largely associated to deep overburden and massive geology may definitely reduce the

amount of coal recovered as fewer panels may be able to be mined in a series or safety concerns with potential "bouncing or bursting " conditions persist.

Geotechnical Considerations to Mine Layout

The mine layout of the Deer Creek Mine for the Mill Fork permit area~~Lease~~ is illustrated on Maps MFU1840D and MFU1841D. The mine layout for this area is designed to be able to mine a large multi-seam area under deep cover by the safest manner and optimize reserve recovery. It is ~~first to be~~ accessed from the North Rilda area in the Hiawatha Seam and crossing the Lease Modification No. 3 area into the Mill Fork Area with a six entry mains development which allows for crossing in a thicker seam. The layout and long term development plan for the Mill Fork Area is centered around optimum placement of the mains, panels and barriers. The mains are developed on the eastern perimeter of the 7' coal isopach which allows also for the shallowest cover for long term integrity. The mains on one side also allow for extended longwall panel lengths and decrease the number of frontal barriers left for longwall panels. The number of panels in a series has been generally kept to three to minimize the resultant increasing stresses created in the deep cover with side abutment contributions.

From the multi-seam consideration, the Blind Canyon (80' to 140' interburden) would be accessed as soon as possible from the Hiawatha Mains by means of rock slopes and a coal transfer shaft so that extraction of the upper seam will take place first. As the Hiawatha seam is developed, its mains also are on the eastern extent of the 7' coal isopach and panel lengths are maximized. The gate entry developments are developed under the gob of the Blind Canyon panels, offset a minimum of 50' from the gate developments of the Blind Canyon. This allows for a more stable development in the Hiawatha seam and higher stresses which may result from remnant pillars above may be absorbed on the longwall face below. Also, the barriers that are shown between the series of panels in the Hiawatha are outside or larger than the barriers left in the Blind Canyon. This is to insure that no high stress barrier will have to be "split" by the lower

seam developments. Also, all frontal barriers or barriers between series of panels is established at a minimum of 500' which historically in deep cover in this region is required.

Mine Production and Equipment

It is expected that an average production rate of 1,000 tons/machine shift for continuous miners and 9,500 tons/machine shift for longwalls will be the production rate in the Mill Fork permit area~~lease~~. Table 500-2 lists the anticipated annual and total production of coal from the Mill Fork permit area~~lease~~. This translates into two miner sections and one longwall section operating 2 shifts/day, 190 days/year in order to achieve the required coal output at full production. These production shifts are 10 hour shifts normally producing Monday through Thursday, with supplemental production and necessary construction performed by assigned workers on the weekend crews (Friday through Sunday).

Table 500-2

Mill Fork Permit Area~~lease~~ Anticipated and Total Production

(Based on March 2005 Mine Plan)

Year	Tons	Year	Tons
2003	34,567.08 (actual)	2012	3,802,447
2004	561,769.84 (actual)	2013	3,734,935
2005	77,273.42 (actual Jan. & Feb.) 2,358,135 Projected Total 2,435,408	2014	3,514,229
2006	3,937,024	2015	3,759,786
2007	3,731,671	2016	3,761,643
2008	3,691,566	2017	3,631,342
2009	3,902,3394,260,357	2018	3,705,936
2010	3,548,291	2019	3,563,862
2011	3,663,544	2020	3,388,821
		2021	44,232

Total Tons = 58,413,413

All in-mine coal haulage is by belt conveyor. Of the total entries in the main entry system, at least one entry is dedicated specifically to the belt conveyor. All mine personnel and materials are transported underground by diesel equipment. Table 5 (Volume 2, Part 3) lists the major ancillary equipment used in Deer Creek Mine.

The extracted coal is sized in the Deer Creek coal handling facility and conveyed to the PacifiCorp - Huntington Power Plant, approximately two miles away. A portion of the coal is also trucked from the Huntington Plant coal yard and transported via truck to supplement the fuel requirements at the Carbon and Hunter Power Plants.

R645-301-524. BLASTING AND EXPLOSIVES

The Deer Creek Mine is a developed and producing underground mine and there is no anticipated need for any blasting activities incident to the underground mining activities. However, if circumstances develop that require surface blasting activities, a plan will be initiated in accordance with DOGM regulations in R645-301-524.

R645-301-525. SUBSIDENCE CONTROL PLAN

This section describes in detail the operator's plan to ensure minimal environmental impacts from mine-induced subsidence. The Engineering Section - Operation Plan plus the Geology Section (R645-301-600) present the detailed data on which the analytical approach for the subsidence control plan is based. The following subsections describe the principal factors involved in controlling subsidence impacts resulting from the proposed mining operations.

Subsidence Damage Probability Survey (Pre-Subsidence Survey)

Multiple surveys have been conducted on the portion of the surface of East Mountain that could possibly be affected by the full extraction or second mining of coal from the Mill Fork Area. The U.S.D.A. Forest Service (the exclusive surface management agency) has extensively addressed pre-subsidence issues in the Environmental Assessment for the Mill Fork Lease Tract, LBA #11.

It has already been determined that there are renewable resources present in the area in the forms of springs, water seeps, grazing land, timber, and wildlife. Also present in the permit area are unimproved roads, trails, a gas well and pipelines, power transmission lines, and some portions of the Castlegate Sandstone escarpment (see Pre-Subsidence Survey Map [Map MFS1839D - Refer to Confidential and Private Volume Deer Creek tab Volume 12 R645-301-500 Engineering]).

Known springs and seeps that are located within the Mill Fork Area second mining areas are shown on the Pre-Subsidence Survey Map (Map MFS1839D, Refer to Confidential and Private Volume Deer Creek tab Volume 12 R645-301-500 Engineering). Volume 9 Hydrologic Section of the ~~Mill Fork~~ MRP, Appendix A, contains a listing of sampling sites and a monitoring schedule. Most of the streams within the permit area are ephemeral and/or intermittent. The streams that flow into Mill Fork Canyon are fed by springs that emanate primarily in the North Horn Formation within the permit boundary. Portions of the headwaters of the drainage basins that feed Crandall and Rilda canyons are within the Mill Fork Area. Second mining, i.e. longwall extraction or room & pillar mining, of the Mill Fork Area will not occur beneath the main stream channels of these canyons. First mining development of access mains from Deer Creek Mine to the Mill Fork Area will occur to the north of the Right Fork of Rilda Canyon.

The entire permit surface area is utilized for grazing of sheep and cattle during the summer season. Experience from the existing PacifiCorp permit areas has shown that the effects of

subsidence on grazing and grazing lands are minimal (refer to R645-301-300: Biology and/or Supplemental Volume 1, Lease Relinquishment).

All existing timber resources on the Mill Fork permit area are administered by the U.S.D.A. Forest Service. Experience on the existing PacifiCorp permit areas over the last 25 years has shown that subsidence does not affect timber resources or access to timber resources (refer to R645-301-300: Biology and/or Supplemental Volume 1, Lease Relinquishment.

Wildlife resources in the permit area are explained in detail in the Wildlife section of this permit application. Experience on the existing PacifiCorp permit areas over the last 25 years has shown that the effects of subsidence on wildlife resources are minimal (refer to R645-301-300: Biology and/or Supplemental Volume 1, Lease Relinquishment.

Only two roads (administered by the U.S.D.A. Forest Service) cross the permit area. These are the Flat Canyon Road, #145, and the East Mountain Road, #244. The Flat Canyon road serves as the access road to the gas well Federal #23-32 and to the top of the north end of East Mountain, and has been graveled and graded. No portion of the Flat Canyon road will be undermined. The East Mountain road, #244, is an unimproved dirt track that winds along the top of the main ridge. This road traverses the main second-mining areas of the Mill Fork Area. The road ends in the north half of Section 11, T.16 S., R.6E, and continues to the north as a pack trail. Several smaller roads and tracks branch off from this main road, but are minor in nature.

Two numbered foot and horse trails are present. The Mill Fork Canyon trail (#391) starts at the top of East Mountain, follows the Mill Fork canyon bottom to the switchback on the main Mill Fork Canyon road (outside the permit boundary). The reclaimed road that follows the top of the

ridge between Mill Fork and Crandall canyons (#086) was first constructed during the 1960's as a fire-fighting access road, and later used by ARCO Coal Company to drill several exploration core holes along the ridge. ARCO Coal Company reclaimed the road in 1982. A foot / horse trail follows the track of the old road. These trails should not be affected by subsidence.

A single gas well, own and operated by Merit Energy, is located within the permit area (identified as Federal #23-32), near the center of Section 23, T.16 S., R.6E. This is a producing well, with an attached transmission pipeline. A gas transmission pipeline extends from this well south along forest road #244 for about 2,000 feet, then exits the permit area to the south. The well is near the southern extent of the mine plan. PacifiCorp and Merit Energy entered into an agreement to establish a working relationship regarding multiple mineral development to insure the maximum utilization of the coal and oil and gas estates in certain lands in Emery County, Utah all in the interest of the conservation and full utilization of natural resources.

As stated in the agreement, "Merit is the owner and operator of a producing gas well in the Area of Interest identified as Well No. 32-23. The well was drilled in 1989. PacifiCorp is conducting active coal mining operations in the Area of Interest in the immediate vicinity of Well No. 32-23 by and through Interwest Mining Company, a wholly owned subsidiary, as its managing agent, and Energy West Mining Company, another wholly owned subsidiary, as mine operator. These mining operations are in the Deer Creek Mine in the 12th West longwall panel, off of the 7th North Mains. It is anticipated that the full extraction of PacifiCorp's 12th West longwall panel could potentially cause a subsidence impact on Well No. 32-23. The parties wish to enter into a proactive agreement to establish the working relationship among the parties as this multiple mineral development activity takes place so as to insure the safe and effective compatible usage

of both the coal and the oil and gas estates and to achieve maximum economic recovery of these natural resources". The multiple mineral development agreement was signed by all parties (PacifiCorp, Merit Energy, Division of Oil, Gas & Mining and SITLA) and became effective on August 12, 2005. This agreement achieves the purpose and intents of Utah Administrative Code R649-3-27.2 such that a cooperative agreement exists between Merit and PacifiCorp which allows multiple mineral development.

Energy West will report of the subsidence monitoring related to Well No. 32-23 in the Annual Subsidence Reports.

Another gas pipeline segment is buried along forest road #017 in the southwest corner of the permit area. This pipeline will not be undermined.

Two power transmission lines are present within the permit area. The largest is the Utah Power 345 KV line that crosses the southwest corner of the permit area in Section 22, T.16S., R.6 E.. The "Plan of Operations" approved in November 2002 included mining adjacent to the powerline over the western end of the 11th West - 12th West Hiawatha longwall panel. Development mining in 11th and 12th West intercepted an extensive split in the Hiawatha seam which limited western development. Based on an revised mine plan, mining will not affect the 345 KV line.

A second transmission line (25 KV) carries electricity from the lower portion of Mill Fork Canyon over the top of Mill Fork Ridge, and down into Crandall Canyon, to the Genwal Mine. This line crosses the small portion of the permit area that projects eastward (NW ¼ NW ¼ Section 8, T.16S. R.7 E.). This transmission line will not be undermined.

Genwal Coal Company maintains a radio repeater at the Mill Fork summit in Section 7, T.16S. R.7 E.. This repeater will not be undermined.

The Castlegate Sandstone outcrop and escarpment are exposed in several portions of the permit area (see the Pre-Subsidence Survey Map, MFS-1839D, PacifiCorp Private and Confidential Volume Deer Creek tab, Volume 12 R645-301-500 Engineering). Some of the outcrops to be undermined by second mining are shown in sections 1 and 12, T.16. S., R.6 E., and sections 6 and 7 of T. 16 S., R. 7 E. Subsidence of the Castlegate Sandstone escarpment has caused occasional cliff failures and rock falls in previous mining areas such as Newberry Canyon and Corncob Wash (Cottonwood Mine), Trail Mountain (Trail Mountain Mine 3rd East Longwall), and Rilda Canyon (Deer Creek Mine 8th West, 7th East and 9th East Longwalls). The Castlegate Sandstone is also exposed in Upper Joes Valley along the western edge of the permit area. Cliff outcrops of the Castlegate Sandstone are small and infrequent on the Mill Fork permit area~~lease~~. Based on the current mine plan no cliff exposures of the Castlegate Sandstone on the Joes Valley side will be undermined by second mining. The Castlegate Sandstone exposures on the Joes Valley side of the permit area are mostly protected by the 22° angle-of-draw buffer zone to prevent second mining under the Joes Valley Fault. The 22° angle-of-draw buffer zone is a requirement (Stipulation #19) of the Environmental Assessment of the Mill Fork Lease Tract, LBA #11, prepared by the U.S.D.A. Forest Service, in which stipulations for leasing the tract were published. According to the E.A., only small failures of the Castlegate Sandstone are to be expected as a result of mine subsidence. Most of the exposed Castlegate outcrops within the Mill Fork Area will not be undermined by second mining.

No other structures, man-made or otherwise, are present on the Mill Fork Area that could be damaged by mine-induced subsidence.

Subsidence Angle of Draw Calculation:

The use in subsidence – related calculations of a 15 degree angle of draw (to the outside limit, or zero ground movement, refer to section below entitled Annual Subsidence Survey Procedures for the projected affected area) is an industry/agency accepted standard used for delineation of surface influence protection from mining areas considered for full extraction mining. Mining experience at Energy West's Deer Creek, Cottonwood, and Trail Mountain mines has provided a sound, scientific basis for using the 15° angle of draw mentioned above (refer to Annual Subsidence Reports of the Deer Creek MRP).

The angle of draw of subsidence produced by full-extraction mining can be influenced by many factors. These include the size and shape of the area mined, number of seams mined, thickness of the coal extracted, depth of overburden, overburden composition, bedding and jointing characteristics of the overburden, fractures or faults in the overburden, adjacent mine workings, and adjacent areas of burned coal and clinker.

Based on data collected by the U.S. Bureau of Mines and over twenty ~~eighteen~~ years of subsidence data collection on East and Trail Mountains, the angle of draw in typical mining conditions is found to be between 0 and 15 degrees from vertical. In some limited areas, the angle of draw is greater than 15 degrees, but in every case, the angle is greater due to the influence of one of the other factors mentioned below.

Faults can influence the angle of draw. If mining occurs adjacent to an existing fault, the area of subsidence will follow the natural plane of weakness formed by the fault. In this case, the angle of draw will be the same as the dip of the fault.

Prehistoric burning of near-outcrop coal creates a partially collapsed rubble or "clinker" zone above the burned out coal, susceptible to further collapse under additional stress. If mine workings extend to an area of burned coal experience has shown that the overburden stresses above the mined area can be transferred to the adjacent burned coal and clinkers which may cause the clinkered areas to collapse or fail. In this case, the angle of draw may appear to be very shallow as the area of subsidence will encompass the mined area plus the clinker collapse area. The failure of the susceptible clinkered areas is the source of subsidence outside the normal area of influence.

For planning purposes, any barrier of protection left in the mine to protect surface features should use a 15 degree angle of draw unless one of the factors mentioned above is known to exist in the immediate area.

Mining Methods and Subsidence

Subsidence at the surface is minimized when mining areas are simple in shape, and mining extraction is complete and consistent within those areas. The operator intends to minimize surface effects of subsidence by using, wherever practical, the longwall mining method and mining the coal deposits as completely as possible. Approximately eighty percent (80%) of the recoverable coal reserve will be mined by the longwall method, the remaining area will be mined by continuous miner units.

The longwall mining method allows almost total extraction of the coal and induces caving of the immediate and upper roof strata. As the coal seam is extracted, the overlying strata cave rapidly. The caving process has been shown to propagate to within 100 feet of the surface in less than two weeks after mining. This was determined by a cooperative study conducted by the U.S. Bureau of Mines using Time Domain Reflectometry (TDR). In this study, a coaxial cable was cemented within a drill hole positioned near the center of the 14th West longwall panel in the Cottonwood Mine. As the caving of the strata occurred, the cable would shear or be stretched. The depth of the shears and stretches were identified with instruments on the surface.

The data collected from this study is contained in Volume 3, Appendix IV of the Deer Creek MRP. Surface subsidence has been observed within two months of the coal extraction. In most areas, the subsidence will stabilize within 2 years of mining.

It is the operators intent to arrange longwall mining areas in large enough blocks of longwall panels as present mining technology or equipment allows in order to minimize the perimeter areas which would be on the sloping edges of the subsidence troughs. The “chain” pillars of support for the longwall gate roads have been designed on the yielding pillar principle so that they will yield to destruction and not impede subsidence within the blocks of panels.

The size of the support coal pillars used in main entries for both the Blind Canyon and Hiawatha seams to ensure long term stability has been determined by basic calculation for the deepest expected cover (from prior mining practice in the area) and USBM studies. Experience has also

shown that, in multi-seam mining circumstances, columnizing main entry development pillars in both seams is essential for long term main entry stability.

Full extraction areas, by definition, are planned and can control subsidence in areas. It is anticipated that the planned subsidence will result in a generally uniform lowering of the surface lands in broad areas, thereby limiting the extent of material damage to those lands and causing no appreciable change to present land uses and renewable resources. Subsidence prediction work has shown that the expected maximum planned and controlled subsidence will vary from zero to fifteen (0-15) feet, assuming that the total cumulative extraction from the two seams will not exceed twenty (20) feet.

Subsidence Monitoring Plan

The establishment of a subsidence monitoring plan is a requirement of the Stipulations section (No.7) of the Environmental Assessment for the Mill Fork Lease Tract, LBA #11, Page A-2 by the U.S.D.A. Forest Service.

The operator initially adopted a twofold approach to subsidence monitoring:

1) aerial photogrammetry,
2) on-the-ground monumentation.

After seven years of comparing the two types of surveys it was determined that both methods effectively document the amount of subsidence which has occurred; however, the aerial photogrammetry method has the advantage of showing more detail because more data points can be monitored with less effort. Therefore in 1987, with the concurrence of the State of Utah

Division of Oil, Gas & Mining (DOGM), the operator discontinued on-the-ground monumentation and now collects subsidence data solely by aerial photogrammetry.

The subsidence monitoring program, conducted since 1980, has produced data which not only document the amount of subsidence that has occurred but also allows the operator to predict the amount of subsidence that is likely to occur when mining in new areas. The detail of the data collected in years past is not included herein. This report is submitted annually to the BLM, USFS, and the Utah Division of Oil, Gas, & Mining.

Aerial Photogrammetry

PacifiCorp's subsidence monitoring program is primarily based on aerial photogrammetry. PacifiCorp has been using aerial photogammetry - based subsidence modeling since 1980. This method has proven to be the best way to collect subsidence data on East Mountain. A baseline photogrammetric survey was conducted in 1980 that included over 21,000 elevations measured on approximate 200-foot spacing grid. In flat areas with limited vegetation, the elevations can be read from the photographs with a precision of one-half foot. In steeper areas, where cliffs are present, the resolution is not as good, and inaccuracies of greater than ten feet can occur. In steeper areas, photogrammetric monitoring can, and has been, augmented by conventional survey data.

Annual Subsidence Survey Procedures

Aerial photographs of the entire Mill Fork permit area will be used in conjunction with 51 widely spaced survey control points on the ground (see Map MFS1857D, Flight Paths with Survey Control) to produce a digital elevation model of the ground surface in successive years from

which a surface subsidence map is generated for each year. The ground control points are marked and surveyed using conventional survey methods, then flagged so that they can be seen in photographs taken from the air. Approximately 100 aerial photographs of the permit area will be taken along 7 flight lines that traverse the permit area from north to south. Overlapping portions of photographs taken from successive viewpoints along the flight lines produce stereoscopic views of the ground surface. These 93 views of overlapping photograph pairs are called "models" in the photogrammetric process. Elevations of the ground surface over the entire permit area are then calculated using a computer-aided stereoplotter, and verified using the 51 known survey points. Ground elevations are calculated for a grid of approximately 200-foot centers, optimized for terrain. The baseline data, including surveying and flagging ground control points, acquiring the aerial photographs, and generating the surface grid and map, for the Mill Fork Area were collected in 2000 (refer to MFS1857D Mill Fork Lease ML-48258 Subsidence Survey: Flight Lines with Survey Control) . These elevations will then be compared to elevations measured from the photographs taken annually in each summer. Using this method, ninety percent of the points measured will be accurate to within plus or minus one-half foot.

PacifiCorp participated with the governmental agency task force which included representatives from the Bureau of Land Management, Forest Service and the Division of Oil, Gas and Mining, to develop *"Memorandum of Understanding for Processing of Requested to Relinquish Federal Coal Leases (10-MOU-97-001)"*. This document established "Standards for Relinquishment Consideration" including the amount of accepted variation in annual subsidence data. As stated in the MOU, the area will be considered stable, if the cumulative subsidence during the period (3 years) has been 1 foot or less under normal circumstances. Based on this agreement, subsidence measurements and areas and subsidence areas shown on PacifiCorp's annual subsidence maps

show areas of total measurable subsidence greater than two feet. PacifiCorp's experience on East Mountain since 1980 has shown that the areas of minimum detectable subsidence, i.e., one foot or more, very rarely extend outside of the outline of the total mine workings, even in areas where more than one seam has been mined. Figure R645-301-500d compares the predicted verus actual subsidence for the Deer Creek Mine (data from cooperative study conducted by the United States Bureau of Mines and PacifiCorp). The angle of draw for subsidence used in future mining areas should be 0^{o}, or the outline of the planned mine workings in areas unaffected by faulting or near surface burned coal. Figure R645-301-500e depicts actual subsidence measured at the Deer Creek Mine north of the Roans Canyon Fault system (additional case studies can be observed in the Annual Subsidence Reports.

The applicant or applicants contractor will maintain survey control aerial targets within the permit boundary necessary to allow the interpretation of coordinate points on photos within $\pm$0.5 foot. Following this procedure the operator will conduct annually an aerial photo survey of all areas which have been undermined. The operator will continue monitoring all areas undermined until the operator and DOGM agree that the subsidence in a given area has become stable and no further monitoring is necessary. The findings of the survey will continue to be reported to DOGM annually in a summary report.

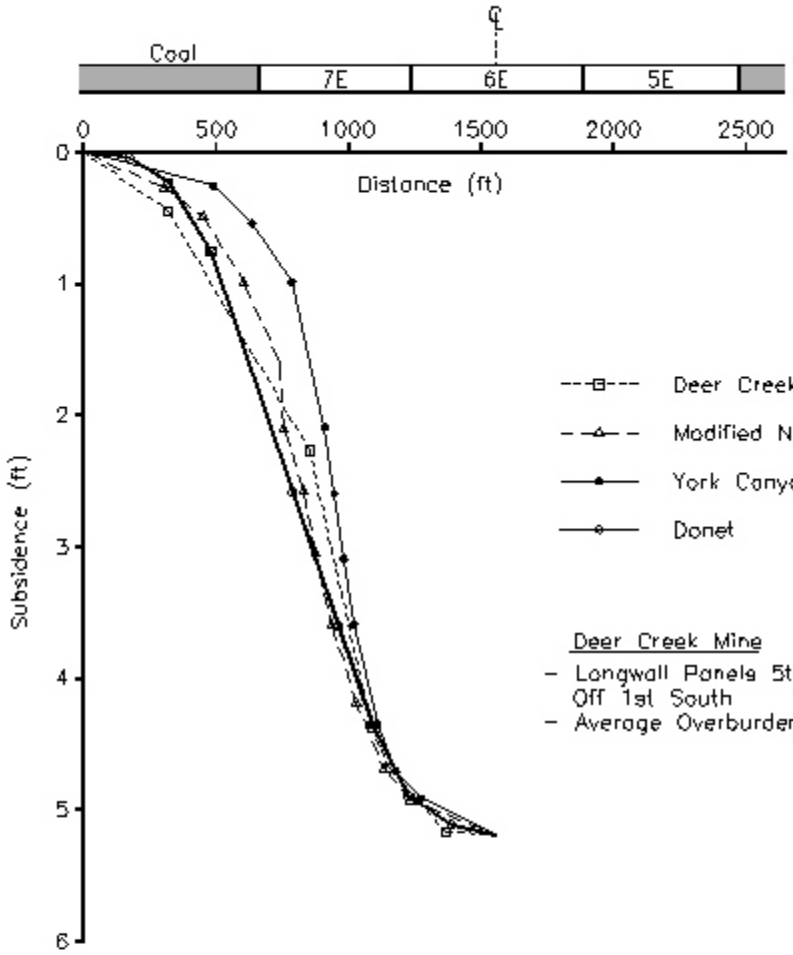


FIGURE R645-301-500d
MEASURED AND PREDICTED SUBSIDENCE
FOR THE MILL FORK AREA OF THE DEER CREEK MINE

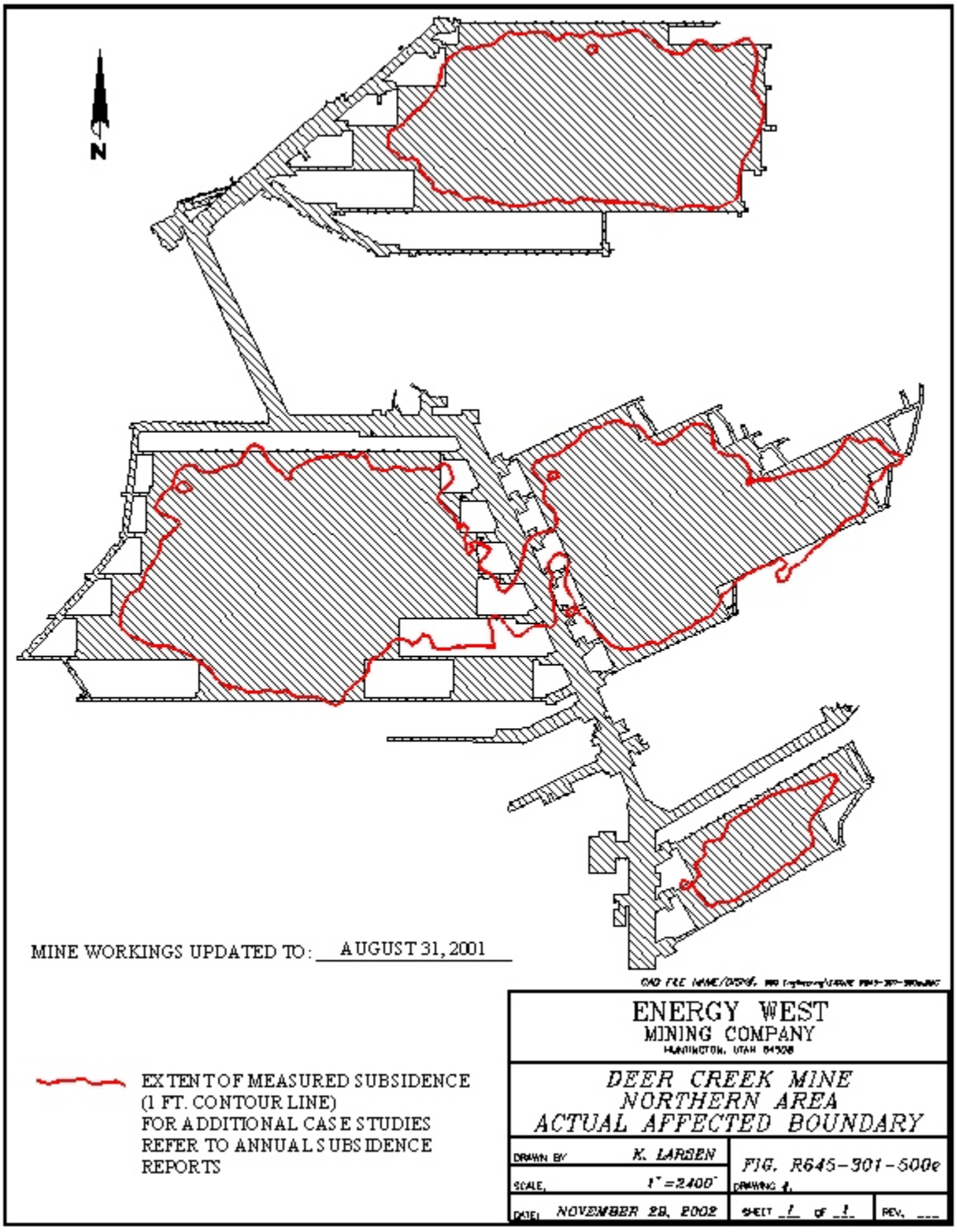
CAD FILE NAME/DISK#: FIGURE R645-301-500d.DWG

ENERGY WEST
MINING COMPANY
HUNTINGTON, UTAH 84528

DEER CREEK MINE
MILL FORK AREA
MEASURED AND PREDICTED SUBSIDENCE

DRAWN BY:	K. LARSEN	FIG. R645-301-500d	
SCALE:	NONE	DRAWING #	
DATE:	APRIL 18, 2002	SHEET 1 OF 1	REV.

*Reference
- United States Bureau of Mines Case Study 1985
- Maleki, Hamid, Subsidence Characteristics in U.S. Coal Mines, 1999


N
MINE WORKINGS UPDATED TO: AUGUST 31, 2001
EXTENT OF MEASURED SUBSIDENCE
(1 FT. CONTOUR LINE)
FOR ADDITIONAL CASE STUDIES
REFER TO ANNUAL SUBSIDENCE
REPORTS
ENERGY WEST
MINING COMPANY
HUNTINGTON, UTAH 84528
DEER CREEK MINE
NORTHERN AREA
ACTUAL AFFECTED BOUNDARY
DRAWN BY K. LARSEN
SCALE, 1"=2400'
DATE NOVEMBER 28, 2002
FIG. R645-301-500e
DRAWING #
SHEET 1 OF 1
REV.

Special Monitoring - Castlegate Cliff Escarpment

Under the currently proposed mine plan for the Blind Canyon and Hiawatha seams, the amount of Castlegate Sandstone outcrop area that would be mined is only a fraction of the total Castlegate Sandstone outcrop area. Segments of the Castlegate Sandstone outcrop to be undermined by full extraction mining are discussed below (see also Map MF-1839D, Refer to Confidential and Private Volume Deer Creek tab, Volume 12 R645-301-500 Engineering). Approximately 3,700 linear feet of outcrop along the north slope of the right fork of Mill Fork canyon will be undermined by a single seam. Of this, about 375 feet are concealed by vegetation and soil, 1,840 feet are steep or rocky slopes, and about 1,490 feet are cliff exposures. Of this, approximately about 2,500 feet of outcrop will be undermined by second mining. Except for about 1,490 feet of cliff exposures, the remaining portion of the outcrop is rocky slopes.

The Castlegate Sandstone formation exposures in the Mill Fork Area contain fewer cliffs than areas to the south and east. This is due mainly to increased vegetative cover, especially on north-facing slopes. Due to the limited cliff exposures of the Castlegate Sandstone, the limited amount of Castlegate Sandstone exposures to be undermined, and the remoteness of these outcrops, no special monitoring or mine layout protection measures are planned for the escarpment in this area. The exact amount of Castlegate outcrops to be undermined by Blind Canyon and Hiawatha seam panels on the north side of the right fork of Mill Fork Canyon is unknown at this point as the exact layout of the panels has not been determined. The layout of these panels will be finalized after the surface exploration drilling program of summer 2006 is conducted. As there are no roads or structures down the fall line from these outcrops, no safety hazard is created.

Mitigation of Subsidence Damage Effects

Should significant subsidence impacts occur, the applicant will restore, to the extent technologically and economically feasible, those surface lands that were reduced in reasonably foreseeable use as a result of such subsidence to a condition capable of supporting similar presubsidence uses.

In order to restore any land affected by operations to a condition capable of supporting the current and postmining land uses stated herein, the operator will replace water (including State Appropriated Water Supplies: refer to R645-301-700.530 and Hydrologic Table MFHT-2) determined to have been lost or adversely affected as a result of operator's mining operations if such loss or adverse impact occurs prior to final bond release. The water will be replaced from an alternate source in sufficient quantity and quality to maintain the current and postmining land uses as stated herein. For a complete discussion including a list of State Appropriated Water Supplies within and adjacent to the Mill Fork permit area~~Lease~~ refer to R645-301-731.530 and Hydrologic Table MFHT-2.

During the course of regular monitoring activities required by the permit, or as the operator otherwise acquires knowledge, the operator will advise DOGM and the surface land management agency of the loss or adverse occurrence discussed above, within ten working days of having determined that it has occurred. Within ten working days after DOGM notifies operator in writing that it has determined that the water loss is the result of the operator's mining operation, the operator will meet with DOGM to determine if a plan for replacement is necessary and, if so, establish a schedule for submittal of a plan to replace the affected water. Upon acceptance of the plan by DOGM, the plan shall be implemented. The operator reserves the right to appeal

DOGM's water loss determinations as well as the proposed plan and schedule for water replacement as provided by Utah Code Ann. 40-10-22(3)(a).

Should any structure such as roads, (FDR-244), power line and related facilities, be adversely impacted as a result of subsidence directly related to the operation of the Deer Creek Mine, (including the Mill Fork State Lease ML-48258/UTU-84285), PacifiCorp will repair or replace the structure. PacifiCorp will inspect FDR-244 annually for damage and will repair any damages at the expense of PacifiCorp. The annual inspection will include review for tension cracks and buckling, followed by restoration of the road surface as necessary. PacifiCorp will notify the Forest Service if any inspection identifies any subsidence related feature which requires restoration.

Section Corners and Monuments

PacifiCorp commits to comply with Special Lease Stipulation #16 which states "The Lessee, at the conclusion of the mining operation, or at other times as surface disturbance related to mining may occur, will replace all damaged, disturbed or displaced corner monuments (section corners, ¼ corners, etc.), their accessories and appendages (witness trees, bearing trees, etc.), or restore them to their original condition and location, or at other locations that meet the requirements of the rectangular surveying system. This work shall be conducted at the expense of the Lessee, by a professional land surveyor registered in the State of Utah, and to the standards and guidelines found in the Manual of Surveying Instructions, United States Department of the Interior.

Subsidence Control

The operator will conduct the underground mining operations so as to prevent subsidence from causing material damage to the surface and to maintain the value and reasonable foreseeable use of that surface in accordance with the preceding subsidence control plan.

Lease Boundary Subsidence Barrier

The northern boundary of this lease adjoins leases currently being mined by Genwal Coal Company. Genwal's current mining and future mining will be within 100 feet of the northern permit boundary along its entire length. BLM has previously recommended that Pacificorp leave a 50-foot barrier between mine workings and permit boundaries. Pacificorps current mine plan uses a 100-foot barrier along the lease / permit area boundary in the Blind Canyon (upper) seam, which is planned to be mined first, as a precaution against overlapping the underlying Genwal workings in the Hiawatha seam which are known to cross the permit boundary line in at least one area. In the Hiawatha seam, a 400 - foot barrier will be left as a side abutment barrier to isolate Pacificorps longwall panels on the south side of the permit boundary from extracted Genwal longwall panels on the north side of the boundary.

As stated in R645-301-525: Annual Subsidence Survey Procedures, the effects of significant subsidence are assumed to be coincident with the outline of the planned mine workings. Therefore, significant subsidence will not cross outside of the permit boundary. Map MFS1866D projects the affected area boundary based on two methods; 1) angle-of-draw, and 2) actual subsidence case studies from the East Mountain area. As depicted on map MFS1866D, the angle-of-draw method projects potential affected areas beyond the northern permit boundary. Based on historical case studies of actual subsidence, (refer to Figure R645-301-500E and

Annual Subsidence Reports), the affected boundary will not exceed the permit boundary. If subsidence occurs outside the permit boundary based on annual subsidence surveys, PacifiCorp commits to amending the the permit boundary to include the affected area.

Based on the current knowledge of the coal reserves on the south and east sides of the permit application area, no second mining will occur close enough to these permit boundaries to warrant a boundary protection barrier. As mentioned in the PROBABLE HYDROLOGIC CONSEQUENCES DETERMINATION section, (728: Hydrologic Balance - Surface Water System), the drainages conveying runoff away from the permit areas are streams in Rilda, Mill Fork, and Crandall canyons. Second mining, i.e. longwall extraction, of the Mill Fork area will be limited to the main ridge of East Mountain, underlying the headwaters of these canyons and subsidence will not occur beneath the stream channels of these canyons. Riparian zones that might exist along the canyons that form the headwaters of these streams are in areas of more than 600 feet of cover, where subsidence effects will not cause damage.

Joes Valley Fault Subsidence Barrier

Along the western boundary of the permit application area, the U.S.D.A. Forest service has stipulated a 22° angle of draw barrier to protect the Joes Valley Fault from mine-induced subsidence effects. This barrier also prevents subsidence – related effects from crossing the permit area boundary to the west. For completed discussion related to the location of the Joes Valley Fault, refer to R645-301-620 Structural Features: Geology Chronology of the Depiction of the Joes Valley Fault in Various Publications. The width of this barrier was calculated as follows: Using field reconnaissance, topographic maps, and low-altitude aerial photographs, the trace of the Joes Valley fault was drawn on the base map. At several locations along the trace of

the fault, the elevation of the fault trace was interpolated from the surface elevation contours. The elevation difference between the fault trace and the projected elevation of the lowest seam to be mined (the Hiawatha) was calculated. This elevation was multiplied by the tangent of the proposed angle of draw (22^{o}) to determine the width of the barrier at each calculation point. This width was then drawn eastward perpendicular to the fault trace to determine the eastward extent of the barrier. A cross-sectional view of this barrier is shown on Map MFU1829D, Geologic Cross - Sections.

Public Notice

The operator will not mine in any areas that would allow potential subsidence effects (as indicated by the angle of draw) to affect any area outside of the lease and permit boundary until this constraint on coal recovery is resolved by SITLA, BLM and DOGM or permission is granted by the adjacent surface agencies. At least six months prior to mining, or within that period if approved by the Division, the underground mine operator will mail a notification to the water conservancy district, if any, in which the mine is located and to all owners and occupants of surface property and structures above the underground workings. The notification will include, at a minimum, identification of specific areas in which mining will take place, dates that specific areas will be undermined, and the location or locations where the operator's subsidence control plan may be examined. PacifiCorp complied this requirement on December 9, 2002. The entire surface area of the Mill Fork permit area~~Lease~~ is administrated by the Forest Service. PacifiCorp considers the permit application process to be the prior notification.

R645-301-526. MINE FACILITIES

Introduction

Coal production from the Mill Fork Area will be transported by an underground conveyor belt system to the Deer Creek Mine facility. The Deer Creek Mine facility is located on a 20 acre site at the junction of Deer Creek Canyon and Elk Canyon (refer to Volume 5, maps 3-9 and 3-9A). The site is characterized by moderate vegetation and rugged, steep terrain. Surface facilities include the following: sediment pond, embankment fills, coal surge bin, transfer tower, breaker station, crusher station, coal weigh bin, truck load-out, facility conveyors, overland conveyor, parking lot, parking garage, office-bathhouse, warehouse-shop, materials storage area, access and service roads, mine ventilation fan, power supply and substation, water treatment system, high pressure pumphouse, water storage tank, sewer treatment system, and drainage system (refer Volume 5, Maps 3-9 and 3-9A).

There are also support facilities located in the Left Fork of Rilda Canyon, a tributary of Huntington Canyon. The facilities pad and access road of this area occupy approximately 2.01 acres of Manti-La Sal National Forest land in the NW1/4, NW1/4, SE1/4 of Section 29, T16S, R7E, SLM (refer to Volume 5, Maps 3-9). These facilities include an access road and a pad area which supports two portals, a substation, power line, fan, water storage tank, and pumphouse.

In addition to the Left Fork facilities, PacifiCorp permitted a new facility in Rilda Canyon during 2005, refer to Volume 11 for complete details related to the Rilda Canyon area.

All facility plans are on file at PacifiCorp-Energy West Mining Company, 31 North Main Street, Huntington, Utah 84528. They are available for public inspection.

With the exception of roads and conveyors, a narrative explaining the construction, use, maintenance, and removal of the previously named facilities can be found in Volume 2, Part 3 of the MRP.

R645-301-527. TRANSPORTATION FACILITIES

As indicated earlier, all disturbance to the Mill Fork permit area will be through underground mining activities. No additional transportation facilities are currently planned. For complete discussion on Transportation Facilities associated with the Deer Creek Mine refer to Volume 2, Part 3.

R645-301-528. HANDLING AND DISPOSAL OF COAL, OVERBURDEN, EXCESS SPOIL, AND COAL MINE WASTE

The Deer Creek Volume 2, Part 3 includes a narrative explaining the construction, modification, use, maintenance, and removal of coal, overburden, excess spoil, and coal mine waste.

R645-301-529. MANAGEMENT OF MINE OPENINGS

All mining activities associated with the Mill Fork permit area will be through underground mining operations. Mine plan layouts (Hiawatha Seam) depicted in R645-301-500 Engineering Section, indicate potential portal breakouts located in Crandall Canyon, (Section 5, Township 16 South Range 7th East SLB&M), within a 2.41 acre right-of-way easement acquired from Andalex Resources/Intermountain Power Agency . The location of the portal breakouts are considered preliminary at this point and will be evaluated and designed based upon future surface coal exploration programs and mine plan considerations. Prior to any surface disturbance, Energy West will secure all necessary permits.

For complete discussion on the sealing of existing mine openings, refer to Volume 2, Part 4 and Volume 11 R645-301-500 Engineering.

R645-301-530. OPERATIONAL DESIGN CRITERIA AND PLANS

The Deer Creek MRP includes a general plan for each sediment pond, water impoundment, and coal processing waste bank, dam or embankment within the permit area (see Volume 2, Part 3). No additional sediment ponds, impoundments, coal processing waste piles, dams or embankments are planned for the Mill Fork Area.

R645-301-532. SEDIMENT CONTROL

No surface facilities, sediment control, or other disturbance is planned for the Mill Fork Area. For complete discussion on sediment control facilities at the Deer Creek Mine, refer to Volume 2 Part 3 and Volume 11 R645-301-700 Hydrology.

R645-301-533. IMPOUNDMENTS

No impoundments are planned for the Mill Fork Area.

R645-301-536. COAL MINE WASTE

No additional waste rock disposal sites are planned for development of the Mill Fork Area. The current sites and standards are listed in the Deer Creek MRP.

R645-301-534. ROADS

No new roads are planned for the Mill Fork Area. For a discussion on the access road for the Deer Creek Mine, refer to Volume 2, Part 3 and Volume 11 R645-301-500 Engineering of the MRP.

R645-301-535. SPOIL

For a discussion on spoil of the Deer Creek Mine, refer to Volume 2, Part 3 of the MRP.

R645-301-536. COAL MINE WASTE

Underground development waste, coal processing waste, and excess spoil will continue to be disposed of in accordance with plans approved by DOGM and MSHA. There are no plans to return coal processing wastes to the underground workings at the Deer Creek Mine.

R645-301-540. RECLAMATION PLAN

All mining activities associated with the Mill Fork permit area will be through underground mining operations. Mine plan layouts (Hiawatha Seam) depicted in R645-301-500 Engineering Section, indicate potential portal breakouts located in Crandall Canyon, (Section 5, Township 16 South Range 7th East SLB&M), within a 2.41 acre right-of-way easement acquired from Andalex Resources/Intermountain Power Agency . The location of the portal breakouts are considered preliminary at this point and will be evaluated and designed based upon future surface coal exploration programs and mine plan considerations. Prior to any surface disturbance, Energy West will secure all necessary permits.

A reclamation plan for the Deer Creek Mine is described in Volume 2, Part 4 and Volume 11 R645-301-500 Engineering of the MRP. This plan includes narrative, maps, designs and plans for the mine.

R645-301-541.2 Surface Coal Mining and Reclamation Activities

All underground openings, equipment, structures, or other facilities not required for monitoring, unless approved by the Division as suitable for the postmining land use or environmental monitoring, will be removed and the affected land reclaimed.

In addition to reclamation related to "Surface Coal Mining and Reclamation Activities", PacifiCorp commits to comply with Utah State Lease For Coal ML-48258 lease stipulation 14. EQUIPMENT: RESTORATION 14.1 Equipment which states "Lessee may abandon underground improvements, equipment of any type, stockpiles and dumps in place if such abandonment is in compliance with applicable law, and further provided that Lessee provides Lessor with financial or other assurances sufficient in Lessor's reasonable discretion to protect Lessor from future environmental liability with respect to such abandonment or any any associated hazardous waste spills or releases. Lessee shall identify and locate on the mine map the location of all equipment abandoned on the Lease Premises. PacifiCorp has developed a policy and commits to notifying the regulatory agencies prior to equipment abandonment and mine sealing. Notification to the agencies includes; the location and type of equipment, reason for abandonment, and an invitation to conduct a site visit to review the situation.